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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,710	06/01/2001	Vanessa Z.H. Chan	M0925/7067	5662

7590

06/26/2006

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Boston, MA 02210-2211

EXAMINER
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CHANG, VICTOR S

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/720,710

Applicant(s)

CHAN ET AL.

Examiner

Victor S. Chang

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 3/28/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-148 is/are pending in the application.
- 4a) Of the above claim(s) 2-16, 18-22 and 25-148 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 17, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Introduction***

1. Applicants' amendments and remarks filed on 3/28/2006 have been entered. Claim 17 has been amended. Claims 1, 17, 23 and 24 are active.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. In view of Applicants' argument, the 112, 1<sup>st</sup> and 2<sup>nd</sup> rejections in sections 2-5 of Office action mailed 8/3/2005 are withdrawn.

### ***Rejections Based on Prior Art***

4. Claims 1, 17, 23 and 24 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lee et al. (Macromolecules, 22, pp.2602-2606).

Lee's paper describes a porous membrane with controlled microstructures from a block copolymer. Narrow molecular weight distributions of the block lengths of the copolymer cause uniform micropores. Depending on architecture of the block copolymer and casting conditions, the microstructure of the porous membrane can be formed by controlled morphology of the segregated microphase (separate domains) of the block copolymer. The TEM and SEM observations of the block copolymer and the resulting porous membrane reveal that the periodic microstructures of the original block copolymer are directly reflected in the shape and size of the

micropores (pp. 2602, Introduction). Lee shows an example self-assembled block copolymers of poly(isoprene) and poly(4-vinylphenyl)dimethyl-2-propoxysilane (pp. 2602-2603).

For claims 1 and 17, it is calculated that the atomic% of silicon atom in the terminal blocks of poly(4-vinylphenyl)dimethyl-2-propoxysilane is  $1/35 = 2.86 \text{ atomic\%}$ , i.e., it is about 3 atomic% as claimed.

For claim 23, Lee discloses that glass transition temperature of the terminal silicon containing block is about 465°K (193°C), which is greater than 0°C (pp. 2603).

For claim 24, Lee discloses that the terminal silicon containing block has average degree of polymerization of 100 (pp. 2602-2603), or average molecular weight of 22,000, i.e., about 30,000 as claimed. Further, it is noted that nowhere does Lee teach a maximum cap on the average molecular weight, and in fact Lee expressly teaches that depending on the architecture of the block copolymer, the shape and size micropores can be designed. As such, Lee's teaching clearly shows that, depending on the designed micropore size requirement, a suitable average molecular weight of the terminal silicon containing block is either anticipated, or an obvious selection.

### ***Response to Arguments***

5. Applicants argument "Lee teaches porous membranes from block copolymers having lamellar, cylindrical, and spherical domains, which are discrete structures ... domains are not in physical contact ... The topologically continuous structure in the present invention ... is distinct in view of discrete structures, in that a self-supporting, three-dimensional, periodic, porous membrane can be produced." (Remarks, page 30) has been carefully considered, but is not

persuasive, because Lee expressly teaches that the hollow domain is continuous through the membrane (abstract, last line), and the shape and size of the micropores reflects the original separated domains, as set forth above.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor S. Chang whose telephone number is 571-272-1474. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H. Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Victor S. Chang*  
Victor S Chang  
Examiner  
Art Unit 1771

6/14/2005

  
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